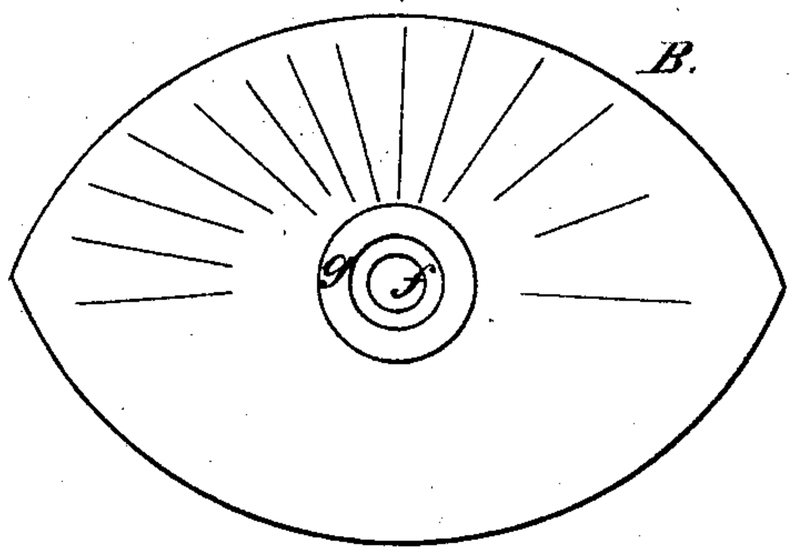
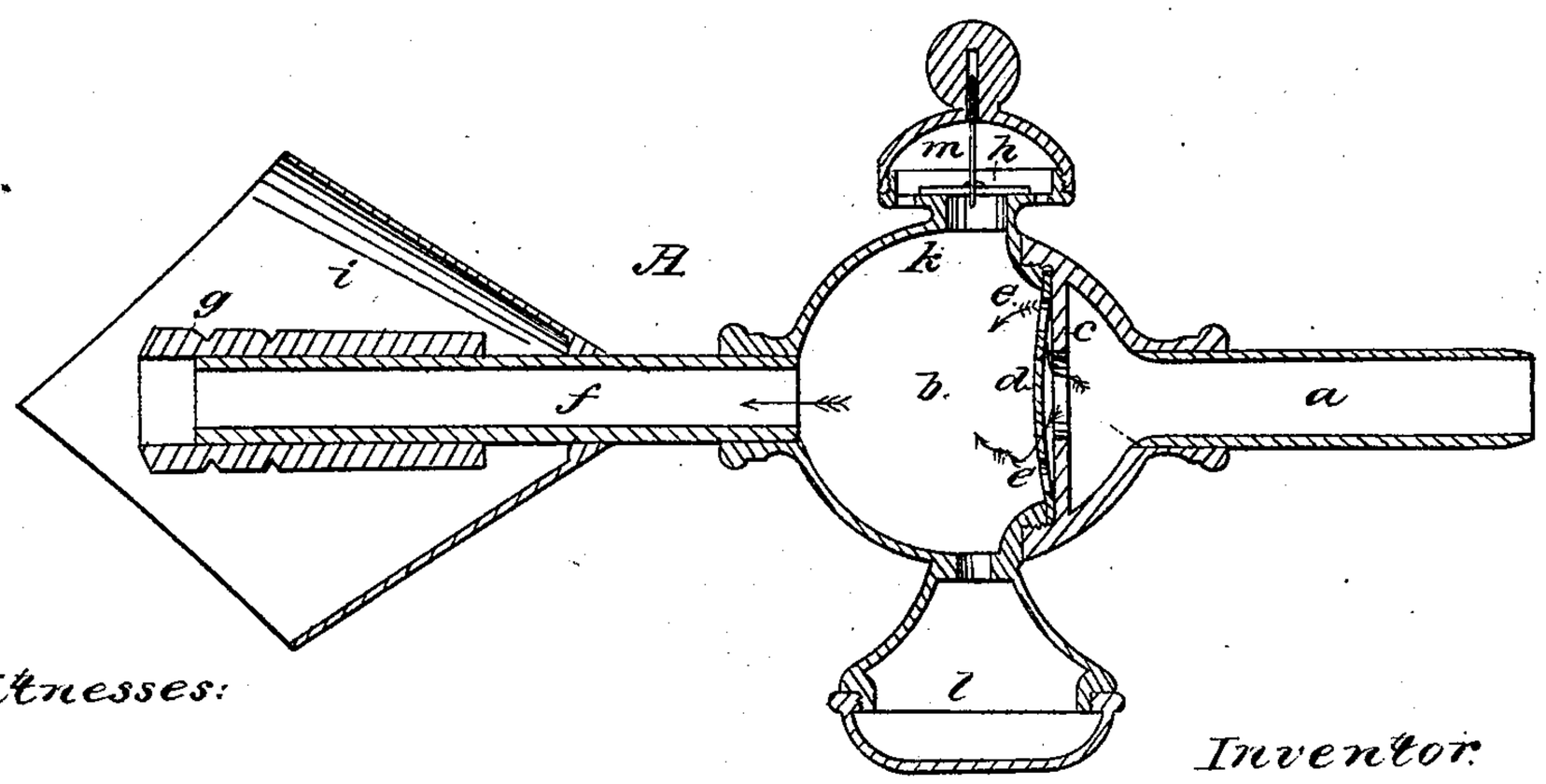
C. Bullock,

Inhaler,

No. 48,789. Patented July 18, 1865.





Witnesses:

H. Gould
W. B. Gleason.

Inventor.

Charles Bullock
By his Atty.
W. B. Crosby.

UNITED STATES PATENT OFFICE.

CHARLES BULLOCK, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN INHALING-TUBES.

Specification forming part of Letters Patent No. **48,789**, dated July 18, 1865.

To all whom it may concern:

Be it known that I, CHARLES BULLOCK, of Cambridge, Middlesex county, and State of Massachusetts, have invented an Improved Inhaling-Instrument; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In connection with apparatus employed for the inhalation of gas, etheric vapors, &c., for medical and surgical purposes, mouth-tubes of varied construction are used.

My invention relates particularly to the construction of this class of instruments to be used with apparatus for administering nitrous-oxide or other gas for dental purposes; and the improvement consists in the employment of an auxiliary mouth-tube in combination with and so as to slide over the inhaling-tube of the instrument.

A in the drawings represents a central and longitudinal section of the tube, taken through the saliva-cup and outlet-valve. B shows an end view of the mouth tube and guard.

a denotes the pipe leading from the gas-containing bag or chamber, this pipe opening into a valve-chamber, *b*, and being separated from the main body of this valve-chamber by a diaphragm, *c*, having an opening closed by an elastic disk-valve, *d*. While the center portion of this valve closes the opening in the diaphragm when impinging against it, apertures *e* permit free passage through the pipe *a* and into the chamber *b* when the valve is drawn away from the diaphragm, as seen in the drawings. From this chamber the inhaling-tube *f* extends, the outer end of said tube having a mouth-tube, *g*, surrounding and sliding freely upon the tube *f*, but packing closely enough upon the said tube to prevent free passage of gas between the contiguous surfaces of the two tubes when the gas is being inhaled.

In the use of nitrous-oxide gas for dental purposes it is well known that its anæsthetic effects are very transitory, and the operator's manipulations have to be almost instantaneous. There is often a tendency in the jaws, after inhalation and when the mouth-tube is withdrawn, to collapse and set together with such rigidity that before they can be forced apart for operation upon the teeth the effect of the gas is gone. I therefore employ the auxiliary mouth-tube *g*, which remains between the teeth when the tube *f* is withdrawn and the teeth tend to collapse, holding the mouth open to the extent generally necessary to perform any operation which can be accomplished during the anæsthetic effects of the gas. Before the inhaler becomes entirely insensible the lips often open, allowing respiration of atmospheric air instead of the gas, which is objectionable. To prevent this a shield, *i*, may be used, extending around the mouth and fitting the face in such a manner that it is easily held up thereto by the operator, even though the teeth close firmly upon the auxiliary tube, thus preventing ingress of air to the mouth, as will be readily understood. At the top of the chamber *b* is an opening, *k*, covered by a valve, *h*, the space *m* above the valve opening freely into the atmosphere; and below the chamber is a saliva or moisture condensing cup, *l*, the lower part of the cup being removable for the purpose of cleaning the same. The diaphragm *c* and tube *a* are also removable from the main chamber *b*, as is also the cap of the eduction-chamber *m*, thus permitting free access to the valves and to the chamber *b*, allowing the whole inner surface of the instrument to be easily washed and kept free from injurious deposits.

The action of the valves *d* and *h* will be readily understood. As the patient respires inhalation draws the valve *h* down upon and closes the opening *k*, simultaneously drawing in the valve *d* and causing the gas to flow through the diaphragm and openings *e* through the chamber *b* and tube *f* into the mouth, while exhalation closes the valve *d* over the opening in the diaphragm, preventing passage of the air breathed from the lungs into the gas-holder, and causing its passage through the opening *k*, valve *h*, (raised by the exhalation,) and chamber *m* into the atmosphere, any moisture from the mouth condensing and running into the receptacle *l*, and the auxiliary mouth-tube and shield operating as before explained.

It will be obvious that the apparatus may be used for inhalation of other than nitrous-oxide gases, through such is the specific use for which it is intended by me.

I am aware that a system of induction and eduction tubes and valves have been employed

in the construction of inhaling-instruments, and therefore lay no claim to such an organization, though I have described the arrangement of these devices, as shown in the instrument to which the auxiliary mouth-tube is applied, as also the flaring shield, which has been used before my invention.

I claim—

Combining with an inhaling-tube an auxiliary mouth-tube, in the manner and for the purpose substantially as set forth.

In witness whereof I have hereunto set my hand this 24th day of March, A. D. 1865.

CHARLES BULLOCK.

Witnesses:
J. B. CROSBY,
F. GOULD.